Introducing Device Management Solutions for Broadband Access

Works Systems, Inc.
Why do I need Device Management?

- The Device Management (DM) Solutions could manage and monitor broadband devices and their associated services deployed across the service networks.

- The DM Solution provides high flexibilities and automates business operation flows from delivering, provisioning, make changes to upgrading.

- Remote diagnostic and troubleshooting are also supported ensuring service quality and customer satisfactions.

- With DM Solutions, broadband services rollout are shortened. The operation and maintenance could be achieved more efficiently.
Essentials for Device Management Solutions

- A good DM Solutions should be a true unified platform and manage diversified types of devices from different device vendors.

- The solutions should support industrial DM standard TR-069 and OMA-DM protocols. Better yet it should be capable to manage other proprietary devices as request.

- The solutions should provide simplicity and flexibility for the deployment and operation of broadband services.

- Offer carrier-grade High Availability and Geo-redundancy.

- Scale from thousand to millions with clustering solution.

- The DM Solutions should provide interface with BSS/OSS and other systems if necessary.
Typical Topology of Device Management Solutions

- Following is a typical network topology of DM Solutions.
Infrastructure Planning
CPE Interoperability Testing and Certification

- First of all, verify CPE standard compliance and capability. This will ensure the CPE is manageable and will not jeopardize existing network performance.
- The solution should be able to test the interoperability between Device Management System and CPE.
- It should also act as certification platform for service provider in selecting CPE.
Ordering Process
BSS/OSS Integration

- Provide flexibilities to fulfill diversified operation flows.
- Can integrate with service provider’s OSS/BSS to access customer service ordering and profile for device and service management.
Logistics Process
Logistic Integration

- To seamlessly integrate with service provider’s logistic environment for actual delivery of device information.

**Scenario 1-Early Binding**: Mapping subscriber info and device info at service provider’s logistic center.

1. **Customer**
2. **Send Order File**
3. **Send Device ID mapping info**
4. **Connect and Activate Immediately**

**Scenario 2-Late Binding**: Configure service after device been delivered.

1. **Customer**
2. **Send Order File**
3. **Send Device ID mapping info from Portal**
4. **Connect, send Device ID, and Activate**
Provisioning Process
Auto-Provisioning Flow

**Step 1**
New Device, Service and Subscriber information are added to OneMS database.

**Step 2**
Device connects to service network, register, being detected.

**Step 3**
Upon receiving Device Inform, Service Provisioning will start automatically.
Service Process
Service Activation and Change

Step 1
Update service information to database

Step 2
Upon receiving Device Inform, Service will be updated automatically
RMA and Service Re-provisioning

**Step 1**
Change Subscriber Device ID information to database

**Step 2**
Device connects to service network, register, being detected

**Step 3**
Upon receiving Device Inform, original Service will be re-provisioned to the new Device automatically
Device Reporting for Operation Management in Device Status & Traffic Uses

Sample of report:
- Device Inform Report
- Deployment Statistics
- Deployment Report
- Device Provision Report
- Device Registration Report
- Firmware Upgrade Report
Policy Management

- For rule base or group base intelligent, event driven management

Customers ➔ Illegal value change, reset value ➔ OneMS DM System

Push new firmware ➔
Support Process
Firmware Roll-out

1. **Step 1**
   - Telecom administrator uploads firmware to Device Management System

2. **Step 2**
   - Admin creates a policy and set to device groups

3. **Step 3**
   - Upon receiving Device Inform, new firmware will be updated to device groups automatically

- **Device groups**
- **Telecom Admin**
- **New Firmware**
- **New Policy**
- **Firmware Update**
- **OneMS DM System**

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Troubleshooting and Diagnostics

For help-desk customer support:
● A subscriber-centric remote device troubleshooting and diagnostics, with user-friendly interface

For network operator support:
● In depth device diagnostic and troubleshoot tools
Health Management

- Device performance monitoring
Device Data Backup and Restore

- For device data integrity and RMA service (device re-provisioning)

Device data include:
- Device type data
- Device inventory
- Device provisioning data
- Device firmware/configuration file repository
- Device collected monitoring data, logs and alarms
- Device pending actions
- Other overall CPE information
- Device configuration files
- Firmware files
Fault Management

- An alarm reporting, acknowledging, and escalating for device error handling
- Log collecting and reporting
Value-Added Service Deployment
Service Management

- Expansible service management architecture for future value-added service roll-out, such as VoIP, IPTV, WiFi.

Customization
(Customer specific features e.g. NBI, Prov. Flow)

SMM
(Service Management Module)

Base Platform

OneMS Platform

Customizable

Pluggable

Configurable

VoIP
WiFi
IPTV

Just add-on the SMM based on the customer needs.
Business Extension, Scalability and Reliability
Scalability

- Traffic balancing
- High Availability
- Geographic redundancy